REMARKS/ARGUMENTS

The arguments herein incorporate the patentability arguments Applicants discussed with the Examiners during the phone interview on March 25, 2008. During the interview, Applicants discussed arguments. Although no agreement was reached, Applicants submit the discussed arguments herein make the substance of the phone interview of record to comply with 37 CFR 1.133. If the Examiner believes that further information on the interview needs to be made of record to comply with the requirements, Applicants request the Examiner to identify such further information.

Applicants added dependent claims 32-34, which were not discussed during the phone interview. to provide further distinctions over the cited art.

Claim 19 was amended to remove a limitation reference numeral.

1.   Amended claims 23-31 Comply with 35 U.S.C. §101

The Examiner rejected claims 23-31 as directed to non-statutory subject matter (35 U.S.C. §101) on the grounds that the "article of manufacture" may encompass transmission media. (Fourth Office Action, pg. 2).

Applicants amended claim 23 to recite that the "article of manufacture" comprises "at least one of a computer readable storage medium having code executed by a processor and a hardware device having logic to communicate with a storage and perform operations, the operations comprising". These added requirements are disclosed on at least para. 19, pgs. 5-6.

During the phone interview, the Examiners indicated the above amendment would overcome the Section 101 rejection.

Applicants request the Examiner to withdraw the Section 101 rejection in view of this amendment.

2.   Claims 1, 2, 8, 9, 10-11, 17, 18, 19, 21, 23, 24, 30, and 31 are Patentable Over the Cited Art

The Examiner rejected claims 1, 2, 8, 9, 10-11, 17, 18, 19, 21, 23, 24, 30, and 31 as anticipated (35 U.S.C. §102(b0) by Lawrence (U.S. Patent No. 6,253,300) and Ruff (U.S. Patent No. 5,706,472), incorporated by reference in Lawrence. Applicants traverse,

Claims 1, 10, 19, and 23 require: receiving an I/O request to write an update to an object in storage; defragmenting the object in storage so that blocks in storage including the object are contiguous in response to receiving the I/O request to write the update to the object, wherein the request to write the update to the object causes the defragmentation operation; and executing the I/O request to write the update to the object in storage.

The Examiner cited col. 5, lines 37-42 of Lawrence as teaching the claim requirement of defragmenting the object in storage so that blocks in storage including the object are contiguous in response to receiving the I/O request. (Fourth Office Action, pgs. 3-4)

The cited col. 5 of Lawrence mentions that each file is stored in several locations separated by regions of the storage medium that do not hold the file's contents and that fragmentation can be alleviated or eliminated by running a defragmentation program on the files before copying them.

Nowhere does this cited col. 5 anywhere disclose the claim requirement that an I/O request to write an update to the object causes defragmentation of the object. Instead, the cited col. 5 mentions that a defragmentation program can be run on files before copying them. Although one may run a defragmentation program at any time, after or before copying data, the cited col. 5 still does not disclose defragmenting an object in response to receiving an I/O request to write the update the object to which the defragmentation is directed. Applicants submit that defragmentation files before copying the files does not disclose performing a defragmentation of an object in response to an I/O request to write to the object.

The Examiner further cited block 194 in FIG. 9 of Ruff with respect to these claim requirements. The cited block 194 of Ruff discusses moving the data. With respect to block 194, Ruff mentions that clusters that would be overlaid by an expanded file allocation table are moved at step 194.

Applicants submit that neither Ruff nor Lawrence disclose the claim requirement of performing a defragmentation of an object in response to an I/O request to write to the object. Instead, Lawrence discusses performing a defragmentation on files before copying them and Ruff discusses moving data in a certain situation.

During the phone interview, the Examiners said that even if Lawrence and Ruff did not disclose defragmenting an object in response to an I/O request to update the object, the Examiners said that it would be obvious to modify Lawrence to perform defragmentation of an

object in response to an update to an object because the cited copy operation of Lawrence that triggers defragmentation is an I/O request and an update is also an I/O request. Applicants traverse this finding because although updating objects is known in the art, combining this art of updating of objects with Lawrence/Ruff would provide a system that performs defragmentation before copying data and that also allows updates to the data. The Examiner has not cited any reference that teaches or suggests the claim requirement of defragmenting an object in response to an I/O request to update the object.

Accordingly, amended claims 1, 10, 19, and 23 are patentable over the cited art because the cited Lawrence does not disclose all the claim requirements.

Claims 2, 8, 9, 11, 17, 18, 21, 24, 30, and 31 are patentable over the cited art because they depend from one of claims 1, 10, 19, and 23, which are patentable over the cited art for the reasons discussed above. Moreover, the following of these dependent claims provide additional grounds of patentability over the cited art.

Claims 2, 11, and 24 depend from claims 1, 10, and 23, respectively, and further require that the I/O request is executed with respect to the object after defragmenting the object.

The Examiner cited col. 5, lines 37-39 of Lawrence with respect to these claim requirements. (Fourth Office Action, pg. 4) Applicants traverse.

The cited col. 5 mentions defragmenting files before copying them. Nowhere does this disclose updating the object after defragmenting the object.

Accordingly, claims 2, 11, and 24 provide additional grounds of patentability over the cited art because the additional requirements of these claims are not disclosed in the cited col. 5.

Claims 8, 17, and 30 depend from claims 1, 10, and 23 and further require operations of receiving the I/O request, initiating the operation to defragment the object, and executing the I/O request of defragmenting the object in storage are performed by a storage controller managing I/O requests to the storage.

The Examiner found that that Lawrence discloses this requirement because the defragmentation occurs in a computer and the computer inherently includes a storage controller and device driver. (Fourth Office Action, pgs. 4-5) Applicants traverse this finding because there is nothing inherent that defragmentation be initiated by the storage controller as opposed to some other computer component. According to the Manual of Patent Examination and Procedure (MPEP), the "fact that a certain result or characteristic may occur or be present in the

prior art is not sufficient to establish the inherency of that result or characteristic." MPEP Sec. 2112, pg. 57 (Aug. 2005, Rev. 3). Thus, the fact that defragmentation "may" be initiated in the storage controller as opposed to a program in the computer makes this finding of inherency inappropriate.

Applicants submit that although computers may have a storage controller as the Examiner notes, the Examiner has not cited any art that discloses, teaches or suggests that performing defragmenting of an object in response to a write to the object is performed by the storage controller. The Examiner is using hindsight to propose a modification to known computer components, such as a storage controller, that is not taught or suggested in the cited art.

Accordingly, claims 8, 17, and 30 provide additional grounds of patentability over the cited art because the additional requirements of these claims are not disclosed in the cited col. 5.

Claims 9, 18, and 31 depend from claims 1, 10, and 23 and further require that the operation of defragmenting the object in storage is performed by a device driver for the storage providing an interface to the storage.

As with claims 8, 17, and 30, Applicants submit that the claims are patentably distinct because the Examiner has not shown where the cited Lawrence discloses that defragmentation is performed by a device driver for the storage providing an interface to the storage as opposed to some other software program, such as an application program or utility. Thus, it is not inherent that a device driver perform the defragmentation.

Accordingly, claims 9, 18, and 31 provide additional grounds of patentability over the cited art because the additional requirements of these claims are not disclosed in the cited Lawrence.

3.   Claims 3, 12, 20, and 25 are Patentable Over the Cited Art

The Examiner rejected claims 3, 12, 20, and 25 as obvious (35 U.S.C. §103(a)) over Lawrence in view of Brown (U.S. Patent No. 6,038,636). (Fourth Office Action, pg. 5)

Applicants submit that these claims are patentable over the cited art because they depend from one of claims 1, 10, 19, and 23, respectively, which are patentable over the cited art for the reasons discussed above. Moreover, these claims provide additional grounds of patentability over the cited art for the following reasons.

Claims 3, 12, 20, and 25 depend from claims 1, 10, 19, and 23, respectively, and further require determining whether an amount of fragmentation of the object in the storage exceeds a fragmentation threshold indicating an acceptable number of bytes stored in non-contiguous locations in response to receiving the I/O request, wherein the object is defragmented if the amount of fragmentation exceeds the fragmentation threshold, and wherein the I/O request to update the object is executed without defragmenting the object in response to determining that the amount of fragmentation does not exceed the fragmentation threshold.

The Examiner cited col. 5, lines 37-39 and col. 7, lines 45-46 of Brown as teaching the additional requirements of these claims (Fourth Office Action, pgs. 5-6).

The cited col. 5 mentions that fragmentation can be eliminated or alleviated by running a defragmentation program on the files before copying them. Nowhere does this cited col. 5 anywhere teach determining whether an amount of fragmentation of an object exceeds a threshold indicating an acceptable number of bytes stored in non-contiguous locations in response to receiving a request to write update an object. Instead, the cited col. 5 mentions that one may run the defragmentation program to alleviate or eliminate fragmentation before copying files.

The cited col. 7 of Brown mentions that a file header includes a number indicating that the memory is valid, the name of a file, and a pointer to the next file, a number indicating the size of the file. Although the cited col. 7 of Brown mentions a number indicating a size of a file, nowhere does this cited col. 7 of Brown anywhere teach determining whether an amount of fragmentation of an object exceeds a threshold indicating an acceptable number of bytes stored in non-contiguous locations in response to receiving a request to write update an object. Applicants submit a number indicating a size of a file does not teach or suggest a threshold indicating a number of acceptable bytes of fragmentation.

Accordingly, amended claims 3, 12, 20, and 25 provide additional grounds of patentability over the cited art because the additional requirements of these claims are not taught in the cited combination of Lawrence and Brown.

4.   Claim 22 is Patentable Over the Cited Art

The Examiner rejected claim 22 as obvious (35 U.S.C. §103(a)) over Lawrence/Ruff in view of Karger (U.S. Patent No. 5,339,449). (Third Office Action, pg. 7)

Applicants submit that claim 22 is patentable over the cited art because it depends from claim 19, which is patentable over the cited art for the reasons discussed above.

5.   Claims 4, 5, 13, 14, 26, and 27 are Patentable Over the Cited Art

The Examiner rejected claims 4, 5, 13, 14, 26, and 27 as obvious over Lawrence/Ruff in view of Douglis (U.S. Patent Pub. No. 2005/018075). (Third Office Action, pgs. 8-9) Applicants traverse.

Applicants submit that these claims are patentable over the cited art because they depend from one of claims 1, 10, and 23, which are patentable over the cited art for the reasons discussed above. Moreover, the below discussed dependent claims provide additional grounds of patentability over the cited art for the following reasons.

Claims 4, 13, and 26 depend from claims 1, 10, and 23, respectively, and further require determining whether a user settable flag indicates to perform defragmentation in response to receiving the I/O request, wherein the object is defragmented if the flag indicates to perform defragmentation.

The Examiner cited para. [0032] of Douglis as teaching the additional requirements of these claims. (Fourth Office Action, pg. 9)

The cited para. [0032] discusses a power-aware monitor that monitors applications to defer execution of non-critical background tasks, that may be daemons or other application and whose execution is desirable only when there is not a restriction on power usage. Examples include full disk virus scans and defragmentation, among others.

Although the cited para. [0032] discusses a power monitor deferring defragmentation to execute when there is no restriction on power usage, nowhere does the cited para. [0032] anywhere teach or suggest a user settable flag that indicates to perform defragmentation in response to receiving the I/O request, which is to update the object. Instead, the cited para. [0032] discusses deferring defragmentation for power management concerns, not indicating whether to perform a defragmentation in response to an I/O request as claimed.

Accordingly, claims 4, 13, and 26 provide additional grounds of patentability over the cited art because the additional requirements of these claims are not disclosed in the cited Lawrence or Douglis.

6.   <u>Claims 6, 15, and 28 are Patentable Over the Cited Art</u>

The Examiner rejected claims 6, 15, and 28 as obvious (35 U.S.C. §103) over Lawrence and Ruff and further in view of Ball (U.S. Patent Pub. No. 2005/0162944). (Third Office Action, pg. 9) Applicants traverse.

Applicants submit that these claims are patentable over the cited art because they depend from one of claims 1, 10, and 23, which are patentable over the cited art for the reasons discussed above. Moreover, these claims provide additional grounds of patentability over the cited art for the following reasons.

Claims 6, 15, and 28 depend from claims 1, 10, and 23 and further require determining at least one logical partition including the object, wherein the object is defragmented if the object is within one logical partition and the I/O request to update the object is executed without defragmenting the object in response to determining that the object is included in more than one logical partition.

The Examiner cited the Abstract, the object 24, and para. 24 of Ball as teaching the additional requirements of these claims. (Fourth Office Action, pgs. 9-10)   Applicants traverse.

The cited Abstract discusses a redundant memory architecture having an active memory and an inactive memory. The active memory supports in-service storage operations. The inactive memory is updated with stored contents of the active memory. Stored contents of the inactive memory are defragmented prior to an activity switch that results thenceforth in the inactive memory assuming the in-service storage operations and the active memory being updated with the stored contents of the inactive memory.   The cited para. [0024] of Ball mentions that the defragmentation can be performed on an inactive redundant memory, such that the in-service performance of a counterpart active memory need not be impacted.

Nowhere does the cited Ball anywhere teach or suggest defragmenting the object to update in response to determining that the object is included within one logical partition. Instead, the cited Abstract mentions that the inactive memory is defragmented prior to an activity

switch that results in the inactive memory assuming the in-service storage operations and that the defragmentation can be performed on an inactive redundant memory.

Accordingly, amended claims 6, 15, and 28 provide additional grounds of patentability over the cited art because the additional requirements of these claims are not taught or suggested in the cited Lawrence and Ball.

7.   Added Claims 32, 33, and 34

Applicants added claims 32, 33, and 34 that depend from claims 1, 10, and 23 and include the combination of requirements of claims 3, 6, and 7, and further require determining whether an amount of fragmentation of the object in the storage exceeds a fragmentation threshold indicating an acceptable number of bytes stored in non-contiguous locations in response to receiving the I/O request; determining at least one logical partition including the object, wherein the object is defragmented if the object is within one logical partition; and determining whether the object is read-only, wherein the object is defragmented if the object is not read-only, wherein the I/O request to update the object is executed without defragmenting the object in response to determining at least one of that the object is included in more than one logical partition, that the object is read-only, and that the amount of fragmentation does not exceed the fragmentation threshold.

These added combination requirements are disclosed in pending claims 3, 6, and 7 and in FIG. 2 and the corresponding description in the Specification.

Applicants submit that claims 32, 33, and 34 are patentable over the cited art because they require the combination of requirements of claims 3, 6, and 7 in one claim, and that the defragmentation not be executed if at least one of the claimed three conditions are not met. Applicants submit the Examiner has not cited any art disclosing, teaching or suggesting the combination of requirements of these claims.

Conclusion

For all the above reasons, Applicant submits that the pending claims 1-6, 8-15, 17-28, and 30-34 are patentable over the art of record. Should any additional fees beyond those paid be required, please charge Deposit Account No. 50-0585.

   The attorney of record invites the Examiner to contact him at (310) 553-7977 if the

Examiner believes such contact would advance the prosecution of the case.

Dated: March 26, 2008   By: /David Victor/ _____

              David W. Victor
              Registration No. 39,867

Please direct all correspondences to:

David Victor
Konrad Raynes & Victor, LLP
315 South Beverly Drive, Ste. 210
Beverly Hills, CA 90212
Tel: 310-553-7977
Fax: 310-556-7984